

GROUP 3.21...
CLASS 2.8.5...
RECORDED

ICATION

1460864

1 460 864

- (21) Application No. 11308/74 (22) Filed 14 March 1974
(23) Complete Specification filed 13 June 1975
(44) Complete Specification published 6 Jan. 1977
(51) INT CL' F16L 19/00
(52) Index at acceptance F2G 25A 2B
(72) Inventors JACK BEACHAM and BRIAN BERNARD DEELEY

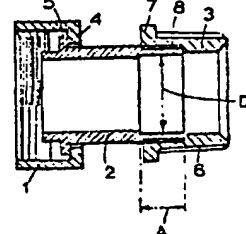
GROUP 3.21...
CLASS 2.8.5...
RECORDED



(54) IMPROVEMENTS IN PIPE UNIONS

(71) PANY LII
Delta Road
hereby dec
pray that a
the method
be particu
following s
This inve
10 providing
first and se
which the
more partic
comprising
15 flange and
member hi
adjacent to
being adap
with the fir
20 of the tub
member by
flanges of
the nut and
the tubular
member on
tightening
of the union
nut onto the
first member,
and a
25 further metallic
member secured
to the other
end of the
tubular member
and adapted
to screw-
threadedly
engage with
the second
screw-
threaded
member, the
union nut
being held
captive on
the tubular
member by
the flange
on the
tubular
member and
said further
member which
has a
sufficiently
large
transverse
dimension
to prevent
passage
of the
union
nut over
said
further
member.
35 Unions of
this kind
have been
used for
connecting
gas
appliances
together,
for
connecting
a meter
service
governor
to a
meter for
example.
It is known
to connect
the tubular
member
40 to said
further
member
after
assembly
of the
union
nut onto
the
tubular
member
by
screwing
and
brazing
the
tubular
member
to
said
further
member.
This is,
however,
an
expensive
operation,
45 requires
testing
of the
seal
between
the
two
members,
and has
a high
reject
rate.
Moreover
the seal
between
the two
members
may be
broken
when
the
union
is

SPEY Q67 *A1007Y/01 *GB 1460-864
Mfg. pipe union for incompatible threaded members - by threading
tubular member, fitting union nut, screwing end member on and
deforming threaded joint
SPERRY & CO LTD 14.03.74-GB-011308
(06.01.77) F16L-19
A pipe union for two incompatible threaded members is
formed from a stamped union nut (1) held captive on a sta-
mped and machined tubular member (2) secured to a forged member (3).
The nut is tapped and the member (3) has an external tapered thread (6).
The union is formed by first forming a thread on one end of the tubular member (2) and then passing the nut over this end. The member (3) is then screwed onto the tubular member and a ball plunger or roller burnishing tool inserted to expand the joint to bind the threads of the joint together to form a gas tight seal. 13.6.75 (4pp)



tion of the
50 method of
and set forth
end of the
er member
threads.
55 the tubular
other end,
er to said
permanently
int between
aid further
radially.
the further
a drop of a
65 applied to
ber at said
other end is
formed with
an external
screw thread
for engage-
ment with a
co-operating
internal
screw thread
formed in
said further
member.
Usually the
further member
will be formed
with an external
radially
extending
polygonal
flange for
engagement
by a
spanner
when the
further
member is
tightened
in use to
the second
member. It
is this
polygonal
flange which
would
prevent
assembly
of the
union
nut onto
the
tubular
member
if the
tubular
member
were to
be made
integral
with the
further
member.
The tubular
member and
the further
member may
be made of
any suitable
metal but
preferably
they are
made of
brass.
The expansion
of the joint
between the
tubular
member and
the further
member is
conveniently
performed
by cold
forming
with a
ball
plunger
or roller
burnishing
tool.
The invention
will now be
further
described,
by way of
example
only, with
reference
to the
accompanying
drawing
which is an
axial cross
section of
a completed
brass union
adapted to
secure an
externally
screw-
threaded
first member
to an
internally
screw-
threaded
second
member to
provide
fluid
communication
95 therebetween.

The union comprises a stamped union nut 1 held captive on a stamped and machined tubular member 2 secured to a further member 3 which is a forging.

5 The union nut 1 is internally screw-threaded for engagement with external screw threads on a first member, not shown, and is provided with an internal radial flange 4 for engagement with an external radial flange 5 which is an integral part of one end of the tubular member 2. When the union nut 1 is screwed in use onto the first member the tubular member 2 is drawn towards the first member by the engagement between the flanges 4 and 5.

15 The further member 3 is formed with an external tapered screw thread 6 for engagement with an internal co-operating screw thread of a second member, not shown, and is provided with an integral polygonal radial flange 7 for engagement by a spanner during tightening in use of the further member 7 to the second member.

20 Initially the other end 8 of the tubular member 3 comprises a plain sleeve. Prior to assembly of the union nut 1 onto the sleeve the exterior of said other end 8 is formed with a plain external screw thread for engagement with a complementary screw thread formed internally of the further member 3. The union nut is then assembled onto the tubular member 2 by passing it over said other end 8 of the tubular member. The tubular member and the further member are then screwed together and a ball plunger or roller burnishing tool is inserted into the joint between the members by passing it through the further member 3, and the joint between the members is expanded radially over the distance A by cold forming to increase the internal diameter D of the joint and to bind the screw threads of the joint together to form a gas-tight seal between the tubular member 2 and the further member 3.

45 In one example the initial diameter D is 0.875 inches and a plunging tool of 0.925" diameter is used. The diameter D is thus increased by slightly more than 4% of its initial value.

50 In order to increase the break-loose torque of the joint between the members 2 and 3 a drop of a screw-thread locking material such as that sold under the Registered Trade Mark 'LOCTITE' STÜDLOCK (OR GRADE 75) is applied to the middle part of one of the screw threads before the members 2 and 3 are screwed together.

WHAT WE CLAIM IS:—

1. A method of manufacturing a pipe union of the kind set forth comprising forming said other end of the tubular member and said further member with complementary screw threads, assembling the union nut onto the tubular member by passing it over said other end of the tubular members, screwing said tubular member to said further member, and then permanently deforming the screw-threaded joint between said tubular member and said further member by expanding the joint radially.

2. The method according to claim 1 in which the tubular member is formed with its screw thread prior to assembling the union nut onto the tubular member.

3. The method according to claim 1 or claim 2 in which prior to screwing the tubular member to said further member screw-thread locking material is applied to at least one of the co-operating screw threads.

4. The method according to any of the preceding claims in which the co-operating screw threads comprise an external screw thread formed on the tubular member and an internal screw thread formed on said further member.

5. The method according to any of the preceding claims in which the expansion of the joint is performed by cold forming.

6. The method according to claim 5 in which the joint between the tubular member is expanded by insertion of a ball plunger.

7. The method according to claim 5 in which the joint between the tubular member is expanded by a roller burnishing tool.

8. The method according to any of the preceding claims in which the tubular member and said further member are of brass.

9. The method according to any of the preceding claims in which the internal diameter of the joint between the tubular member and said further member is increased by more than four per cent of the initial diameter.

10. The method according to claim 1 and substantially as described with reference to the accompanying drawing.

11. A pipe union of the kind set forth produced by the method according to any of the preceding claims.

12. A pipe union of the kind set forth manufactured according to the method of claim 10 and substantially as described with reference to the accompanying drawing.

The union comprises a stamped union nut 1 held captive on a stamped and machined tubular member 2 secured to a further member 3 which is a forging.

5 The union nut 1 is internally screw-threaded for engagement with external screw threads on a first member, not shown, and is provided with an internal radial flange 4 for engagement with an external radial flange 5 which is an integral part of one end of the tubular member 2. When the union nut 1 is screwed in use onto the first member the tubular member 2 is drawn towards the first member by the engagement between the flanges 4 and 5.

15 The further member 3 is formed with an external tapered screw thread 6 for engagement with an internal co-operating screw thread of a second member, not shown, and is provided with an integral polygonal radial flange 7 for engagement by a spanner during tightening in use of the further member 7 to the second member.

20 Initially the other end 8 of the tubular member 3 comprises a plain sleeve. Prior to assembly of the union nut 1 onto the sleeve the exterior of said other end 8 is formed with a plain external screw thread for engagement with a complementary screw thread formed internally of the further member 3. The union nut is then assembled onto the tubular member 2 by passing it over said other end 8 of the tubular member. The tubular member and the further member are then screwed together and a ball plunger or roller burnishing tool is inserted into the joint between the members by passing it through the further member 3, and the joint between the members is expanded radially over the distance A by cold forming to increase the internal diameter D of the joint and to bind the screw threads of the joint together to form a gas-tight seal between the tubular member 2 and the further member 3.

45 In one example the initial diameter D is 0.875 inches and a plunging tool of 0.925" diameter is used. The diameter D is thus increased by slightly more than 4% of its initial value.

50 In order to increase the break-loose torque of the joint between the members 2 and 3 a drop of a screw-thread locking material such as that sold under the Registered Trade Mark 'LOCTITE' STULOCK (OR GRADE 75) is applied to the middle part of one of the screw threads before the members 2 and 3 are screwed together.

WHAT WE CLAIM IS:—

1. A method of manufacturing a pipe union of the kind set forth comprising forming said other end of the tubular member and said further member with complementary screw threads, assembling the union nut onto the tubular member by passing it over said other end of the tubular members, screwing said tubular member to said further member, and then permanently deforming the screw-threaded joint between said tubular member and said further member by expanding the joint radially.

2. The method according to claim 1 in which the tubular member is formed with its screw thread prior to assembling the union nut onto the tubular member.

3. The method according to claim 1 or claim 2 in which prior to screwing the tubular member to said further member screw-thread locking material is applied to at least one of the co-operating screw threads.

4. The method according to any of the preceding claims in which the co-operating screw threads comprise an external screw thread formed on the tubular member and an internal screw thread formed on said further member.

5. The method according to any of the preceding claims in which the expansion of the joint is performed by cold forming.

6. The method according to claim 5 in which the joint between the tubular member is expanded by insertion of a ball plunger.

7. The method according to claim 5 in which the joint between the tubular member is expanded by a roller burnishing tool.

8. The method according to any of the preceding claims in which the tubular member and said further member are of brass.

9. The method according to any of the preceding claims in which the internal diameter of the joint between the tubular member and said further member is increased by more than four per cent of the initial diameter.

10. The method according to claim 1 and substantially as described with reference to the accompanying drawing.

11. A pipe union of the kind set forth produced by the method according to any of the preceding claims.

12. A pipe union of the kind set forth manufactured according to the method of claim 10 and substantially as described with reference to the accompanying drawing.

BARKER, BRETTELL & DUNCAN
Chartered Patent Agents
Agents for the Applicants
138 Hagley Road
Edgbaston
Birmingham B16 9PW.

Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1977.
Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from
which copies may be obtained.